

## SECTION 07 7600

### ROOF PAVERS

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#### LANL MASTER SPECIFICATION

When editing to suit project, author shall add job-specific requirements and delete only those portions that in no way apply to the activity (e.g., a component that does not apply). To seek a variance from applicable requirements, contact the ESM Architectural POC.

When assembling a specification package, include applicable specifications from all Divisions, especially Division 1, General Requirements.

Delete information within "stars" during editing.

Specification developed for ML-3 projects. For ML-1 / ML-2, additional requirements and QA reviews are required.

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#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Pavers for pedestrian traffic, on pedestals, over roofing or waterproofing membrane.
- B. Pavers for roofing ballast.
- C. Pedestrian traffic pads.

##### 1.2 SUBMITTALS

- A. Submit the following in accordance with Section 01 3000, Submittals:
  - 1. Catalog Data: Manufacturer's data sheets on each product to be used, including material properties, and storage and handling requirements and recommendations.
  - 2. Installation Instructions: Manufacturer's installation techniques.
  - 3. Samples: Two samples, minimum size 2-1/2 inches square, representing actual product to be supplied from regional plant showing color, patterns, etc.
  - 4. Warranty: As specified herein.

##### 1.3 QUALIFICATIONS

- A. Installer shall have completed a minimum of 50 roofing squares of paver system in the Southwest US. To qualify for this requirement, the completed paver system must have met all conditions to obtain material and labor warranty.
- B. Installer shall supply a list of projects, completed in the Southwest US, where the specified paver system has been in place and performing successfully for a period of not less than 5 years.

#### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Comply with Section 01 6000, Product Requirements.
- B. Store products off the ground; if stored on the roof, do not exceed structural capacity of deck.

#### 1.5 WARRANTY

- A. Deck Pavers: Provide manufacturer's 10-year limited material warranty.
- B. Pedestals: Provide pedestal manufacturer's 3-year warranty.
- C. Ballast Pavers: Provide manufacturer's standard limited material warranty.
- D. Ballast Pavers: Provide manufacturer's standard limited wind uplift warranty.

#### 1.6 MAINTENANCE TOOLS

- A. [Paver Lifter: Provide one Probst Slab Grabber; deliver to LANL Construction Inspector; provide 3-year warranty.]

### PART 2 PRODUCTS

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For light use (i.e., quarterly moderate maintenance, or monthly light maintenance)

Provide Protection Pads at all traffic areas.

For medium use (i.e., monthly moderate maintenance, or weekly light maintenance) provide Ballast Pavers mounted on protection mat as required by roof membrane manufacturer.

For public access/heavy use (i.e., roof top patios or for heavy maintenance access) use Deck Pavers mounted on pedestals.

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#### 2.1 PRODUCT OPTIONS AND SUBSTITUTIONS

- A. Comply with Section 01 2500. Substitution Procedures.

#### 2.2 MANUFACTURERS

- A. Acceptable Manufacturer:
  - 1. Westile, Inc.
  - 2. Hanover Architectural Products, Inc.

#### 2.3 DECK PAVERS (FOR PUBLIC ACCESS/HEAVY USE APPLICATIONS)

- A. Precast concrete unit.
  - 1. Thickness: 2 inches minimum.
  - 2. Compressive Strength: 8800 psi, minimum, when tested in accordance with ASTM C140, containing latex or polymer admixtures and or fiberglass stranding.

3. Water Absorption: 5 percent, maximum, when tested in accordance with ASTM C 140.
  4. Freeze-Thaw Resistance: Maximum 1 percent loss of dry weight, when tested in accordance with ASTM C67.
  5. Color: [                      ].
- B. Fixed height paver pedestals: High-density polyethylene with open draining grid structure and integral spacer ribs on upper surface for even joint spacing.
1. Provide sizes and height required to make top surface of pavers a single plane without abrupt changes in surface plane, although not required to be level.
  2. Provide all parts and accessories required.
  3. Provide pedestals supplied by paver manufacturer.

## 2.4 BALLAST PAVERS (FOR MEDIUM USE APPLICATIONS)

- A. Precast concrete interlocking pavers with integral “feet” allowing water to pass beneath without obstruction.
1. Size: [                      ].
  2. Thickness: 2 inch minimum.
  3. Edges: Interlocking
  4. Bearing Area: Minimum of 21 square inches per paver.
  5. Compressive Strength: 5000 psi, minimum, after 28 days cure, when tested in accordance with ASTM C140.
  6. Flexural Strength: 400 psi, when tested in accordance with ASTM C293.
  7. Density: 145 pcf, maximum.
  8. Water Absorption: 5 percent (nominal), when tested in accordance with ASTM C 140.
  9. Weight not to exceed 27 lbs/sq. ft.
  10. Color: [                      ].
- B. Protection Mat: Nonwoven polyester (as required by roof membrane manufacturer) to protect the roof membrane.
- C. Perimeter Attachments: Products made by one of the following:
1. Metal Era.

2. W.P. Hickman.
3. Or approved equal.

## 2.5 ROOF PADS (FOR LIGHT USE APPLICATIONS)

- A. Manufacturer's supplied compatible material roof pads

## PART 3 EXECUTION

### 3.1 EXAMINATION

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Existing Roof: A&E or LANL engineering to verify that roof structure load capacity has been determined as adequate to accept additional load condition.

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- A. Do not begin installation until roofing or waterproofing work is completed, including work penetrating waterproof plane.
- B. If substrate preparation is the responsibility of another installer, notify LANL Construction Inspector of unsatisfactory preparation before proceeding.
- C. Proceeding with construction constitutes acceptance of existing conditions by Contractor.

### 3.2 PREPARATION

- A. Clean roof surfaces thoroughly prior to installation.
- B. Plan sequence of transporting and placing pavers to avoid damage to waterproof membrane and already installed pavers; place 3/4-inch thick plywood in traffic paths or use carts with pneumatic tires.
- C. Correct any roof deficiencies (i.e., membrane drainage) prior to commencement.

### 3.3 INSTALLATION OF DECK PAVERS

- A. Install pavers on pedestals per manufacturer's instructions.
- B. Install pavers over entire roof surface as specified in Contract Documents.
- C. Install pavers in pattern specified in Contract documents.
- D. Install pavers in square grid pattern with joints parallel and perpendicular to building walls and other lines; do not cut pavers unnecessarily; if less than full size pavers will be required, locate less than full size pavers at least conspicuous edges or balance cuts equally between parallel building walls.
- E. Install pavers with top surface flat with minimal difference in height between adjacent pavers; accommodate varying heights due to slope by using adjustable height pedestals; use a reliable method of determining levels.

- F. When pavers must be cut, use mason's saw; do not chip or split; remove dust generated by cutting immediately using high-pressure water or air to avoid discoloration of pavers.

### 3.4 INSTALLATION OF BALLAST PAVERS

- A. Install pavers per manufacturer's instructions.
- B. Install pavers in locations and pattern specified in Contract documents.
- C. Install protection mat wherever required by roof membrane manufacturer.
- D. Install protection mat where hold-down clips will be used, over ridges and centered in valleys, and where foot traffic will occur.
- E. Install first row of pavers at longest roof edges, with upper shiplap edge facing roof edge.
  - 1. Maintain maximum of 1-1/4 inch between first row of pavers and roof edge protrusions.
  - 2. Install remaining rows with adjacent joints staggered [staggered bond] [straight bond or rectangular grid].
  - 3. Install remaining rows with joints even and a minimum of 1/4 inch spacing between pavers in all directions.
  - 4. Continue rows neatly around corners where possible. Do not cut pavers unnecessarily.
  - 5. At top of ridges and in angled valleys, install pavers tightly fitted over change in plane; miter pavers to fit and join small pieces to larger pieces with polyurethane adhesive.
  - 6. Where two slopes meet at a continuous low point, the final row of pavers at the bottom of the slopes may be cut to fit provided minimum 6 inch wide pieces are used and not more than 1 inch space is left between the final rows on opposing slopes.
  - 7. Where two slopes meet at a continuous low point, the lower shiplap edge of final row of pavers at the bottom of the slopes may be left exposed provided not more than 1 inch space is left between the final rows on opposing slopes.
- F. Install hold-down clips for pavers adjacent to roof protrusions and pavers less than full size.
- G. Install perimeter retainer around entire perimeter.
- H. At walkways, fasten pavers together with polyurethane adhesive yet still providing sufficient space beneath pavers to allow water migration.
- I. With loose laid roof membrane install ballast aggregate over areas of roof not covered by pavers; use minimum 12 pounds per square foot.

### 3.5 PROTECTION

- A. Protect installed products until completion of project. Prohibit construction traffic unless adequate precautions are taken. BALLAST PAVERS ARE NOT DESIGNED FOR EQUIPMENT TRAFFIC.
- B. Repair or replace products damaged due to inadequate protection.

#### END OF SECTION

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Do not delete the following reference information:

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#### FOR LANL USE ONLY

This project specification is based on LANL Master Specification 07 7600 Rev 1, dated April 27, 2006.